Operations Concerns

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Development and Unification of Regulatory Requirements

- Concern: ESH rules differ by country
- Operators need to be made aware of rules different from those of their native country
- Answer: reach international agreement

Staff Makeup: Differing Operations Models by Laboratory

- Engineer (DESY) vs. Physicist (FNAL, CERN, BNL)
- Bachelors degree vs.Technicians
- Outside contractors (KEK)
- Which model is “best”?

Training / Consistency of Training

- Design and implement appropriate balance of on–site and remote training (including OJT)
- Centralized training coordinator and documentation/records
- Reactor model – “rigorous control to insure uniform, timely training”

Operator Focus – How Many Machines Do They Work On? (Local vs. Remote)

- Dedicated operations group for remote operation -- that is -- the group does not serve the local laboratory AND the remote laboratory.

Language/culture Differences

- Adopt primary language for operations.
- Encourage multi-lingual operations staff, and provide training .

Software Development Coordination

- Ensure widespread operations locations are included in discussions with developers/controls.

Working Relationship With Support Groups

- Periodic rotation of remote staff to site lab
- Include local on-site support staff in remote operations shift changes

Information Flow

- Reactor model – rigorous control of information.
- “Post-its” on a console in one control room are not adequate operator aids for operators in another control room.
- Strict document control required to insure timely information reaches all groups.

Identical Consoles

- Consoles in each control room must be identical

Shutdown Activities

- What will operators in remote control rooms do during long machine shutdown periods?

Discontinuous Shift Rotation (Example 3 Weeks On, N Weeks Off)

- Negotiate and reach agreement on optimal shift schedule to assure adequate continuity in operations

TV Cameras in Control Rooms?

- Not desirable.
- Value added?
- Operator controlled camera shade will make the idea more palatable.

Who Is Responsible for a Mistake?

- Question of blame for, say, environmental mistakes.
- Requires agreed limits on liability before start of commissioning.

How to Deal With Bargaining Unit (SLAC)/contract (KEK) Employees?

- Negotiate and reach agreement with appropriate labor and management bodies.
- Operations employees should be all “the same” (all contract/bargaining etc.).

Normalized Compensation – Compensation for Same Job May Vary by Location

- Operators talk to each other.
- Negotiate and reach agreement with appropriate labor and management body.

Power Failure at Controlling Lab (Not Machine Site Lab)

- Monitoring and interlock of beam until control re-established.
- Maintain “heartbeat” between controlling lab and site lab.
- Hand off to “next” lab in the shift rotation?

Recovery From Faults, e.g. Power Dips,etc

- Requires increased formality of operations.
- Detailed documentation, procedures (operations and troubleshooting) and training.
- Potential big issue; better and more reliable diagnostics.

Recovery From Machine Development (Example Shift Starts W/ One Lab “in Control”)

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- Detailed documentation, procedures (operations and troubleshooting) and training.
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Roles, Responsibilities, Authorizations, Authorities (next series of slides)

- Shift supervisor
- Group leader
- Maintenance coordinator
- Run coordinator

Shift Supervisor Concerns

- Configuration control.
- Shift supervisor must have authority to permit changes to the state of the accelerators during production running.
- Must be in the decision loop when state changes (maintenance, machine development) are made .

“Site Concerns”

Need STRONG on site personnel presence for:

- Fault recovery.
- Emergency response.
- Access control.
- Radiation surveys.
- Search and secure.
- Lockout Tagout,
- Key configuration control, etc.

“Group Leader Concerns”

- How to organize shifts across N laboratories.
- “Authority” for personnel management across N labs .
- Need to define organization structure and hierarchy.

Maintenance Coordination, Authorization, Prioritization

- Need strong central maintenance coordinator (may need to be on-site) working with a central run coordinator.
- Allow for additional on-site manpower for maintenance recovery.

Run Coordinator Concerns

- Machine development/studies protocols – gives approvals.
- Program coordination (eg.Determine start of maintenance) – coordinator may need to be at site lab near experiments and machines.
- Experiment liaison, program scheduling & coordination (fine scale through macro scale).
- Coordination of daily or weekly status meetings.

Devils Advocate Question

Remote operations appears feasible, but, given that some level of local on-site, 24/7 support is necessary, why not implement (instead) a concept with a central CR and full operations/support staff on-site, w/ remote “consoles” distributed to enable remote accelerator physics/machine development and expert troubleshooting/monitoring?